

**REMARKS**

The present invention relates to a vinyl ether group-containing (meth) acrylic ester composition, and methods of producing, transporting, storing, transferring and purifying the same.

In the Office Action dated January 24, 2006, claims 11-14 were rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Further, claims 1-3, 5-8 and 10-21 were rejected under 35 U.S.C. § 103(a) based on each of GB 976304 ("GB '304"), Bauer et al (U.S. Patent 2,692,256) or Ruckenstein et al (U.S. Patent 6,384,146) in view of *Kirk-Othmer Encyclopedia of Chemical Technology*, Acrylic Acid and Derivatives ("Kirk-Othmer Encyclopedia").

In the present Amendment, claim 13 has been amended to incorporate the subject matter of claim 15. Claims 6, 7, 11, 12, 14, 15 and 17 have been canceled. Claims 4 and 9 were previously canceled. No new matter has been added and entry of the Amendment is respectfully submitted to be proper. Upon entry of the Amendment, claims 1-3, 5, 8, 10, 13, 16 and 18-21 will be all the claims pending in the application.

**I. The "Kirk-Othmer Encyclopedia" Reference**

*Kirk-Othmer Encyclopedia of Chemical Technology*, Acrylic Acid and Derivatives ("Encyclopedia") was first cited in the present rejection; however, it is not listed in the Form PTO-892 attached to the Office Action.

The Examiner is respectfully requested to list Kirk-Othmer Encyclopedia on a Form PTO-892 and make it of record.

**II. Response to Rejection under 35 U.S.C. § 112, Second Paragraph**

Claims 11-14 were rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Specifically, it was asserted that claims 11-14 do not recite any steps.

Applicants respectfully submit that present claim 13 is not indefinite. In the Amendment, Applicants have amended claim 13 to recite a step. In addition, Applicants have canceled claims 11, 12 and 14. Accordingly, the Examiner is respectfully requested to reconsider and withdraw the rejection.

**III. Response to Rejection under 35 U.S.C. § 103(a)**

Claims 1-3, 5-8 and 10-21 were rejected under 35 U.S.C. § 103(a) based on each of GB 976304 ("GB '304"), Bauer et al (U.S. Patent 2,692,256) or Ruckenstein et al (U.S. Patent 6,384,146) in view of *Kirk-Othmer Encyclopedia of Chemical Technology*, Acrylic Acid and Derivatives ("Kirk-Othmer Encyclopedia").

Applicants respectfully submit that the present claims are patentable over each of GB '304, Bauer et al or Ruckenstein et al in view of Kirk-Othmer Encyclopedia for at least the following reasons.

a. Claims 1-3, 16 and 18-21

It was asserted that the cited primary references each teach preparation of vinyl-containing (meth)acrylic esters.

However, none of the cited references nor the Kirk-Othmer Encyclopedia disclose or suggest the total amount of the radical polymerization inhibitor and the vinyl ether group-containing (meth)acrylic ester relative to the vinyl ester group-containing (meth)acrylic ester composition.

In addition, none of the examples described in the cited references disclose a vinyl ester group-containing (meth)acrylic ester composition which satisfies the ratio of the total amount of the radical polymerization inhibitor and the vinyl ether group-containing (meth)acrylic ester relative to the vinyl ester group-containing (meth)acrylic ester composition recited in the present claims.

Thus, even if, for the sake of argument, there might be motivation to combine the cited references, the combination still would not result in the present invention, which requires that the total amount of the radical polymerization inhibitor and the vinyl ether group-containing (meth)acrylic ester is not less than 95% by weight relative to the vinyl ether group-containing (meth)acrylic ester composition.

b. Claims 5, 10 and 13

GB '304, Bauer et al and Ruckenstein et al disclose nothing specifically with respect to the oxygen concentration when handling (transporting, storing or transferring), producing or purifying a vinyl ether group-containing (meth)acrylic ester. Therefore, it is reasonable to assume that the procedures in GB '304, Bauer et al and Ruckenstein et al are carried out under an

ambient atmosphere. It is known that the oxygen concentration in air is about 21%, which does not satisfy the oxygen concentration recited in present claims 5, 10 and 13.

Moreover, the Kirk-Othmer Encyclopedia discloses or suggests nothing with respect to the oxygen concentration.

Furthermore, as described on page 6, lines 22-28 of the present specification, the present inventors have found that when the oxygen concentration in the gaseous phase in contact with vinyl ether group-containing (meth)acrylic esters is excessively low, (meth)acryloyl groups undergo polymerization due to the lack of oxygen; and when the oxygen concentration in the gaseous phase is excessively high, vinyl ether groups deteriorate. The present invention, which requires a specific oxygen concentration, overcomes these problems. None of the cited references disclose or suggest these features.

c. Claim 8

As described on page 7, lines 15-26 of the present specification, the present inventors found that when, in the method of producing vinyl ether group-containing (meth)acrylic esters by subjecting hydroxyl group-containing vinyl ethers and (meth)acrylic esters to a transesterification reaction, hydroxyl group-containing vinyl ether compositions containing specific impurities and not completely pure hydroxyl group-containing vinyl ethers, are used as raw materials, the desired esters can be produced in an economic manner and the byproduct lower alcohol can be removed more easily than in the case where pure hydroxyl group-containing vinyl ethers are used as raw materials, thereby shortening the time required for the production of vinyl ether group-containing (meth)acrylic esters.

On the other hand, the cited references disclose or suggest nothing specially with respect to intentionally using the compounds containing impurities having specific structures in the production of vinyl ether group-containing (meth)acrylic esters.


In view of the foregoing reasons, Applicants respectfully submit that the present claims are not obvious over the cited references and thus the rejection should be withdrawn.

**IV. Conclusion**

In view of the above, reconsideration and allowance of claims 1-3, 5, 8, 10, 13, 16 and 18-21 are now believed to be in order, and such actions are hereby earnestly solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the local D.C. telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

  
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